



Dart Hawkesbury
1270 Aberdeen St
Hawkesbury, ON
K6A 1K7
Canada

Tel (613) 632-5200

5007939

D4680-041
Job Sheet 164763



PRELIMINARY
ISSUE

Part No: D4680-041

Job Qty: 1 ea

Part Name: Skidtube Assembly



Part Weight: 0 lbs

Status: Scheduled

Priority: Medium

Job Created: 9/30/17

Job Tracking No:

Due Date: 10/31/17

Created By: Mario Poulin

Type: Stock

Description:

Note: DWG REV F IPP REV:A 13.04.16 NEW ISSUE DD VERF:JLM IPP REV:B 13.08.08 PB2 DD VERF:JLM IPP REV:C 13.09.10 PB3 DD VERF:JLM IPP REV:D 13.11.14 AS PER DWG REV.B DD VERF:JLM IPP REV:C 14.11.24 AS PER DWG REV.C DD VERF:JLM IPP REV:D 15.06.10 AS PER DWG REV.D DD VERF:JLM IPP REV:E 16.03.23 AS PER DWG REV.E DD VERF:JLM

Ship Via:

Bill of Materials

Part/Part Name	Part Note	Serial No	Quantity	Location
D4680-041 Skidtube Assembly	DWG REV F IPP REV:A 13.04.16 NEW ISSUE DD VERF:JLM IPP REV:B 13.08.08 PB2 DD VERF:JLM IPP REV:C 13.09.10 PB3 DD VERF:JLM IPP REV:D 13.11.14 AS PER DWG REV.B DD VERF:JLM IPP REV:C 14.11.24 AS PER DWG REV.C DD VERF:JLM IPP REV:D 15.06.10 AS PER DWG REV.D DD VERF:JLM IPP REV:E 16.03.23 AS PER DWG REV.E DD VERF:JLM		0.000	
AELS-1032-130 Rivnut			0.000	
AN3C4A Bolt			0.000	
AN3C5A Bolt			0.000	
AN526C1032R10 Screw			0.000	
CR3212-5-05 Rivet			0.000	
D2965 Cap	DWG REV C SHEETS 1,3 IPP: A 00.05.31 New Issue EC IPP Rev:Added Turning as per Rev B 06-12-15 JLM		0.000	
D2965-3 Cap	DWG REV C SHEETS 2,3 IPP Rev A New Issue 06-12-19 JLM IPP REV:B 17.01.17 AS PER DWG REV.C DD VERF:JLM		0.000	
D4680-041-BENT Extrusion Bent	DWG REV E U/R IPP REV:A 16.05.16 NEW ISSUE DD VERF:JLM		0.000	
D4681-041 Web Assembly	DWG REV B SHEETS 1,2 IPP REV:A 13.04.15 NEW ISSUE DD VERF:JLM IPP REV:B 13.08.08 PB1 DD VERF:JLM IPP REV:C 13.11.14 AS PER DWG REV.B DD VERF:JLM		0.000	
D4686-1 Spacer	DWG REV B IPP REV:A 13.02.20 NEW ISSUE DD VERF:JLM IPP REV:B 13-06-15 NEW LENGHT JLM VERIFIED BY:DD IPP REV:C 13.11.14 AS PER DWG REV.B DD VERF:JLM		0.000	
D4753-1 Doubler	DWG REV A IPP REV:A NEW ISSUE 13-02-21 JLM VERIFIED BY:DD		0.000	
D5304-1 Crossbolt	DWG REV A IPP REV:A NEW ISSUE 15-09-24 JLM VERIFIED BY:DD		0.000	
D5520-1 Doubler	DWG REV A-PRELIM IPP REV:A 17.05.12 NEW ISSUE			
MS20601-AD4W3 Rivet				
NAS1149C0332R Washer				

Status: Stock

Part: **D4680-041 B164763**

Created: 9/30/17 1:28 PM DART.MICHAUD-FEBRILLE.VICTORIA



Serial No: **S000265**

Printed By: Goldston, Justin 10/2/17 10:45 AM

Job Routing

DART
AEROSPACE
S007939



Skidtube Assembly

PART NO: D4680-041
Revision:
Operation: Packaging
Change No:

Dart Aerospace Ltd.
1270 Aberdeen Street
Hawkesbury, ON K64 1K7
CANADA
TEL.: 1 613 632-5200
Email: sales@dartaero.com
www.dartaerospace.com

Mfg Date: 11/08/17
Job No: 164763

PRELIMINARY
ISSUE

Op No	Operation	Qty	Due Date	Standard		Workcenter/Supplier	
				Setup hrs	Run Hrs	Workcenter / Supplier	Lead Time
90	Start up Operation	1 Ea	10/30/17	0.00	0.00	Start up container	
220	Powdercoat <i>M138041</i>	1 pcs	10/30/17	0.00	0.17	Powdercoat1	
230	QC <i>all 12/14/08</i>	1 pcs	10/30/17	0.00	0.00	QC3	
260	HandFinish <i>all 12/14/08</i>	1 pcs	10/31/17	0.00	0.74	HandFinish4 <i>DAS</i>	
270	QC	1 pcs	10/31/17	0.00	0.00	QC5 <i>38</i>	
300	Packaging	1 pcs	10/31/17	0.00	0.00	Packaging3 <i>9-88</i>	
310	QC21-SA	1 Ea	10/31/17	0.00	0.00	QC21 <i>DAS</i>	

Part Op 220 - START TIME: *5:10*

OV.T: 3:20 PM FINISH: 5:40

NOV 09 2017

Descriptions: 260 - 1- Install Ground Wire inserts as per Dwg D4680. 3- Install Fwd & Aft caps as per Dwg D4680 and Detail "A" & "B".
Fastener must be install wet as per note (9). 4- Wing Walk as per Dwg D4680 and QSI 005 4.4

Job BOM

Part / Item	Component Name	Quantity	Operation	Special Comments
D4680-041 B164763		1 Ea (1 ea)	90-Start up Operation	
AELS-1032-130	Rivnut <i>500 7389</i>	3 Ea (3 ea)	260-HandFinish	<i>A684-1032-130</i>
AN3C4A	Bolt <i>FM138204-2</i>	3 Ea (3 ea)	260-HandFinish	
AN3C5A	Bolt <i>500 1919</i>	2 Ea (2 ea)	260-HandFinish	
AN526C1032R10	Screw <i>FM137851-5</i>	2 Ea (2 ea)	260-HandFinish	
D2965	Cap <i>F127852</i>	1 Ea (1 ea)	260-HandFinish	
D2965-3	Cap <i>F126369</i>	1 Ea (1 ea)	260-HandFinish	
NAS1149C0332R	Washer <i>5001086</i>	5 Ea (5 ea)	260-HandFinish	

Job Allocations

Operation	Component Part	Required	Inventory	Allocated	Std Qty
90-Start up Operation	D4680-041 B164763	1	1	0	0
260-HandFinish	AELS-1032-130	3	0	0	0
	AN3C4A	3	0	0	0
	AN3C5A	2	0	0	0
	AN526C1032R10	2	0	0	0
	D2965	1	0	0	0
	D2965-3	1	0	0	0
	NAS1149C0332R	5	0	0	0

Part Specifications

Specifications could not be found.

Work Order Summary

Thursday, September 28, 2017 9:52:14 AM

Page 1 of 2

Criteria : Work Order ID: 164763 Item ID: D4680-041 Product Family SKIDTUBES
Work Order Start Dates 8/3/2017 to 8/3/2017 11:59:59 PM Work Order Required Dates 9/1/2017 to 9/1/2017
11:59:59 PM

All References

Work Order Status Released

Work Order ID	164763	Required Qty	1.0000	Status Code	Released
Item ID	D4680-041	Accepted Qty	0.0000	Scrap Qty	0.0000
Item Name	Skidtube Assembly				
Current Acct Value	\$2,477.420				
Start Date	8/3/2017	Required Date	9/1/2017	Completed Date	
Standard	** Actual **		** Acct. Value **	** Variance **	** Variance % **
Direct Costs	Total	Each	Each	Each	Each
Material	\$112.360	\$0.000	\$220.150	\$220.150	100.00%
Labor	\$593.662	\$0.000	\$600.237	\$600.237	100.00%
Outplant	\$58.798	\$0.000	\$44.160	\$44.160	100.00%
Variable Burden	\$0.000	\$0.000	\$0.000	\$0.000	0.00%
Fixed Burden	\$1,262.857	\$0.000	\$1,355.170	\$1,355.170	100.00%
Material Burden	\$0.000	\$0.000	\$0.000	\$0.000	0.00%
** Total **	\$2,027.677	\$0.000	\$2,219.717	\$2,219.717	

Item ID/Item Name	Required Qty	Issue Code	Issue Date	Issued Qty	Cost Amount
CR3212-5-05 Rivet	68.0000		9/18/2017	68.0000	\$22.440
D4680-041-BENT ✓ Extrusion Bent	1.0000		9/18/2017	1.0000	\$90.538
D4681-041 Web Assembly	1.0000		9/18/2017	1.0000	\$214.608
D4686-1 ✓ Spacer	8.0000		9/21/2017	8.0000	\$68.390
D4753-1 ✓ Doubler	16.0000		9/18/2017	16.0000	\$200.016
D5304-1 ✓ Crossbolt Spacer	2.0000		9/21/2017	2.0000	\$22.717
D5520-1 ✓ Doubler	2.0000		9/28/2017	2.0000	\$97.139
MS20601-AD4W3 ✓ Rivet	32.0000		9/18/2017	32.0000	\$6.390
Total Matl Amts:					\$722.239

Work Center HandFinish

Employee ID	Rout Seq ID	Labor Date	Setup Hours	Actual Setup Hours	Labor Hours	Actual Labor Hours	Nbr of WOs	Setup Amount	Labor Amount	Fix Burd Amount	Var Burd Amount	Total Amounts
LECO02												
8/10/2017												
150			0.00	0.00	0.78	0.39	2.00	\$0.000	\$8.542	\$21.321	\$0.000	\$29.863
9/27/2017												
210			0.00	0.00	0.80	0.27	3.00	\$0.000	\$5.844	\$14.588	\$0.000	\$20.433
Total:			0.00	0.00	1.59	0.66	5.00	\$0.000	\$14.386	\$35.910	\$0.000	\$50.296

Work Center Skidtubes

Employee ID	Rout Seq ID	Labor Date	Setup Hours	Actual Setup Hours	Labor Hours	Actual Labor Hours	Nbr of WOs	Setup Amount	Labor Amount	Fix Burd Amount	Var Burd Amount	Total Amounts
ELLI01												
8/3/2017												
120			0.00	0.00	1.00	1.00	1.00	\$0.000	\$26.020	\$50.500	\$0.000	\$76.520
120			0.00	0.00	1.11	1.11	1.00	\$0.000	\$28.939	\$56.166	\$0.000	\$85.106
8/9/2017												
120			0.00	0.00	1.70	1.70	1.00	\$0.000	\$44.278	\$85.936	\$0.000	\$130.214
120			0.00	0.00	1.98	1.98	1.00	\$0.000	\$51.613	\$100.172	\$0.000	\$151.785
120			0.00	0.00	0.55	0.55	1.00	\$0.000	\$14.197	\$27.553	\$0.000	\$41.749
8/10/2017												
120			0.00	0.00	2.38	2.38	1.00	\$0.000	\$61.899	\$120.134	\$0.000	\$182.033
170			0.00	0.00	0.89	0.89	1.00	\$0.000	\$23.028	\$44.693	\$0.000	\$67.720
170			0.00	0.00	0.37	0.37	1.00	\$0.000	\$9.692	\$18.811	\$0.000	\$28.504
170			0.00	0.00	0.70	0.70	1.00	\$0.000	\$18.157	\$35.239	\$0.000	\$53.396
8/14/2017												
170			0.00	0.00	1.09	1.09	1.00	\$0.000	\$28.305	\$54.934	\$0.000	\$83.239
9/18/2017												
170			0.00	0.00	1.66	1.66	1.00	\$0.000	\$43.165	\$83.774	\$0.000	\$126.939
9/21/2017												
170			0.00	0.00	1.85	1.85	1.00	\$0.000	\$48.056	\$93.268	\$0.000	\$141.325
170			0.00	0.00	1.13	1.13	1.00	\$0.000	\$29.452	\$57.161	\$0.000	\$86.613
Total:			0.00	0.00	16.40	16.40	13.00	\$0.000	\$426.801	\$828.341	\$0.000	\$1,255.142

Work Order ID 164763

Friday, July 28, 2017 9:30:10 AM

164763

PRELIMINARY ISSUE

Page 1

Item ID: D4680-041 Accept *N900040100* Setup Start *NS1*

Revision ID: URF 17-547 Stop *NS2*

Item Name: Skidtube Assembly

Start Date: 8/3/2017 Start Qty: 1.00 *1*

Required Date: 9/1/2017 Req'd Qty: 1.00 *1*

Reference:

Cust Item ID: U/R N.O.

Customer:

Approvals: Process Plan: UM Date: 17/7/28 Tooling: _____ Date: _____ Run Start *NR1*

QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop *NR2*

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
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Draw Nbr	Revision Nbr
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D4680 PRELIM.

F

120

120

Skidtubes

Skidtubes

Skidtubes

Memo

PICK D4680-041 BENT

1-Cut Aft end as per dwg D4680

2-Deburr ends

3-Drill Aft & Fwd Cap holes using DT8678 & DT8901 open aft cap 0.187".

4-Locate DT10149 & Drill Ground wire hole on top of Tube.

5-Locate DT10149 with 0.187" cleco in aft cap ,then Pilot Drill all X-Bolt holes using 0.187" drill.

6--Drill holes for D5520-1 doubler using DT10309 A & B, Detail H. Locating from 3th and 4th crossbolt holes from aft using .1875 clekos. Spot drill tube using #20 drill (note 10). Remove DT10309 B. Re-install DT 10309 A drill thru tube and doubler using #20 drill (note 10), cleko as you go. Remove .1875 clekos and open holes in tube and doubler to 0.750". Remove doublers and identify orientation. Countersink detail H as per dwg. Note 13.

7-Open remaining X-Bolt holes to .750" (8 places)

8-Open ground wire hole .297" at 95.75" (1 at fwd end & 2 at aft end at 20.81" ref.)

1 0 BE
17-08-10

DQA _____ Date: _____

WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐			
Date : _____	Step #: _____	QTY Effective : _____		MRB (QSI042) Approval _____	
Description Work Order Deviation		Disposition		Completed By _____ Lead hand / Supervisor Approval Verification _____ QC / QA Coordinator Approval _____	
Root Cause Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐ No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐		FAULT CATEGORY Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐ Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐ Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Misabeled ☐ Fit/Function ☐ Misaligned/off center ☐ Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐			
		OTHER : _____			

Work Order ID 164763

Friday, July 28, 2017 9:30:10 AM

164763

Page 2

Item ID: D4680-041 Accept ***N900040100*** Setup Start ***NS1***
Revision ID: URF 17-547 Stop ***NS2***
Item Name: Skidtube Assembly
Start Date: 8/3/2017 Start Qty: 1.00 ***1*** Cust Item ID:
Required Date: 9/1/2017 Req'd Qty: 1.00 ***1*** Customer:
Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
	9- 3 most fwd x-bolt holes must be laid out manually, open to #30.								
	10-Open Aft & Fwd Cap holes using .208" drill.								
	11- Drill Rivet Holes as per Dwg D4680 using DT10065 Detail D. 8 places per side.								
	12-Deburr holes.								
140	QC5- Inspect part completeness to step on W/O	0.00							
140									
QC	Memo	0.02							
Quality Control									
150	Chemical Conversion Coat per QSI005 4.1	0.00							
150									
HandFinish	Memo	0.78							
Hand Finishing									

BE 17-08-10

DAE
38
P-88
AUG 10 2017

2017-08-10
JSL
BE3

DQA: _____ Date: _____

WORK ORDER NON-CONFORMANCE / UPDATE



QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐																																																											
Date :		Step #:		QTY Effective :				MRB (QSI042) Approval																																																							
Description Work Order Deviation				Disposition				Completed By Lead hand / Supervisor Approval Verification QC / QA Coordinator Approval																																																							
Root Cause		FAULT CATEGORY																																																													
Environment ☐	No Re-verification ☐	Pressure/Forced ☐	Temperature/Cure ☐	Power Loss/Surge ☐	Positioned Wrong ☐	Design ☐	Operator ☐	Bending ☐	Set-up ☐	Folio/Program ☐	Outside Dimensions ☐	Doc/Data ☐	Offset/Setup ☐	Centre Not Concentric ☐	BOM/Route ☐	Grain ☐	Over/Under tolerance ☐	Equip/Tooling ☐	Supplier ☐	Cracks ☐	Broken/Damage/Defect ☐	Weld ☐	Part Incorrect ☐	Handling/Pre ☐	Training ☐	Crimp/Kink/Ripple/Wave ☐	Inspection Incomplete/Unqualified ☐	Wrong Stock Pulled ☐	Part Lost/Missing ☐	Material ☐	Use for Testing ☐	Cuffs ☐	Contamination ☐	Out of Sequence ☐	Part Moved ☐	Internal Transport ☐	Poor Information ☐	Crushing ☐	Countersink ☐	Off-set ☐	Drawing ☐	Tribal Knowledge ☐	Rushing ☐	Heat Treat ☐	Cut Too Short ☐	Mislabeled ☐	Finish ☐	LOA ☐	Product Improvement ☐	Wave/Twist in Tube ☐	Instructions Incomplete/Unclear ☐	Fit/Function ☐	Misread ☐	Substation ☐	Process Improvement ☐	Marks/Chatter ☐	Drill Holes ☐	Misaligned/off center ☐	Turning Sequence ☐	Past Expiry Date ☐	Manufacturing Process ☐	OTHER :	
Misidentified ☐	Past Due ☐																																																														

Friday, July 28, 2017 9:30:10 AM

Page 3

Quality Control

1 0 17-09-18 ^{SE}

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐			
Date : _____	Step #: _____	QTY Effective : _____		MRB (QSI042) Approval	
Description Work Order Deviation		Disposition		Completed By	
				Lead hand / Supervisor Approval Verification	
				QC / QA Coordinator Approval	
Root Cause		FAULT CATEGORY			
Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐ No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐	Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐ Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐	Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Mislabeled ☐ Fit/Function ☐ Misaligned/off center ☐ Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐			
OTHER : _____					

Work Order ID 164763

Friday, July 28, 2017 9:30:10 AM

164763

Page 4

Item ID: D4680-041 Accept ***N900040100*** Setup Start ***NS1***
Revision ID: URF 17-547 Stop ***NS2***
Item Name: Skidtube Assembly
Start Date: 8/3/2017 Start Qty: 1.00 ***1*** Cust Item ID:
Required Date: 9/1/2017 Req'd Qty: 1.00 ***1*** Customer:
Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
170	Skidtubes	0.00							
170									
Skidtubes									
Skidtubes									
	Memo	0.80							
	1-Install doublers using DT10309 B. Detail H. Shave rivets as required.								
	2- Bond web as per Dwg D4680 & QSI 015								
	A/R 241 Sike Flex Batch: <u>137946</u>								
	Exp Date: <u>18-03-29</u>								
	start time: _____								
	end time: _____								
	3- Seal all faying surfaces using proseal and rivet Doubler as per Dwg D4680.								
	Detail D.								
	A/R Proseal Batch: <u>138400</u>								
	exp date: <u>10/17</u>								
	LET IT CURE FOR 7HRS								
	START TIME: _____								
	FINISH TIME: _____								
	4-Shave rivet as required, remove Proseal spill over.								
	5- Ream holes section C-C as per dwg, deburr 8 places (Through doubler and tube).								
	6- Swage x-bolt spacers as per Dwg D4680 and sectionl C-C 8 places.								
	7- Swage x-bolt spacer as per dwg D4680 section G-G & boreout as per dwg								
	8- Trim/Grind flush per QSI 002								

P.T.O.

BE17-08-14

BE17-08-18

BE17-09-21

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: <u>164763</u> Part No. <u>D4680-041</u> NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☒ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS <table style="width:100%;"> <tr> <td>Skid-tube ☐</td> <td>Cross tube ☐</td> <td>Water Jet ☐</td> <td>Engineering ☒</td> </tr> <tr> <td>Machining ☐</td> <td>Small Fab ☐</td> <td>Prod. Eng. Coord. ☐</td> <td>Quality ☐</td> </tr> <tr> <td>Thermoforming ☐</td> <td>Finishing ☐</td> <td>Rec/Store/Packaging ☐</td> <td>Other ☐</td> </tr> <tr> <td>Large Fab ☐</td> <td>Composite ☐</td> <td>Supplier ☐</td> <td></td> </tr> </table>						Skid-tube ☐	Cross tube ☐	Water Jet ☐	Engineering ☒	Machining ☐	Small Fab ☐	Prod. Eng. Coord. ☐	Quality ☐	Thermoforming ☐	Finishing ☐	Rec/Store/Packaging ☐	Other ☐	Large Fab ☐	Composite ☐	Supplier ☐																																															
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Date: <u>17-03-23</u>		Step #: <u>170</u>		QTY Effective: <u>0</u>		MRB (QSI042) Approval																																																																	
Description Work Order Deviation				Disposition																																																																			
At the time of assembly doubler D5520-1 Rev A prelim was use. D5520-1 is only alodine. Upon release of D5520-1 it is now alodine and primo.				Acceptable to have no prime on D5520-1 Doubler. Design similar to 206A/B skid tube that uses no prime w/o issue. Skids are non-flact.																																																																			
				Completed By DAS 12 9-89 <u>17/0/23</u> Lead hand / Supervisor Approval Verification <u>017/09/26</u>																																																																			
				QC / QA Coordinator Approval <u>AD 17-03-23</u>																																																																			
Root Cause <table style="width:100%;"> <tr><td>Environment ☐</td><td>No Re-verification ☐</td></tr> <tr><td>Design ☒</td><td>Operator ☐</td></tr> <tr><td>Doc/Data ☐</td><td>Offset/Setup ☐</td></tr> <tr><td>Equip/Tooling ☐</td><td>Supplier ☐</td></tr> <tr><td>Handling/Pre ☐</td><td>Training ☐</td></tr> <tr><td>Material ☐</td><td>Use for Testing ☐</td></tr> <tr><td>Internal Transport ☐</td><td>Poor Information ☐</td></tr> <tr><td>Tribal Knowledge ☐</td><td>Rushing ☐</td></tr> <tr><td>LOA ☐</td><td>Product Improvement ☐</td></tr> <tr><td>Substation ☐</td><td>Process Improvement ☐</td></tr> <tr><td>Past Expiry Date ☐</td><td>Manufacturing Process ☐</td></tr> <tr><td>Misidentified ☐</td><td>Past Due ☐</td></tr> </table>		Environment ☐	No Re-verification ☐	Design ☒	Operator ☐	Doc/Data ☐	Offset/Setup ☐	Equip/Tooling ☐	Supplier ☐	Handling/Pre ☐	Training ☐	Material ☐	Use for Testing ☐	Internal Transport ☐	Poor Information ☐	Tribal Knowledge ☐	Rushing ☐	LOA ☐	Product Improvement ☐	Substation ☐	Process Improvement ☐	Past Expiry Date ☐	Manufacturing Process ☐	Misidentified ☐	Past Due ☐	FAULT CATEGORY <table style="width:100%;"> <tr> <td>Pressure/Forced ☐</td> <td>Temperature/Cure ☐</td> <td>Power Loss/Surge ☐</td> <td>Positioned Wrong ☐</td> </tr> <tr> <td>Bending ☐</td> <td>Set-up ☐</td> <td>Folio/Program ☐</td> <td>Outside Dimensions ☐</td> </tr> <tr> <td>Centre Not Concentric ☐</td> <td>BOM/Route ☐</td> <td>Grain ☐</td> <td>Over/Under tolerance ☐</td> </tr> <tr> <td>Cracks ☐</td> <td>Broken/Damage/Defect ☐</td> <td>Weld ☐</td> <td>Part Incorrect ☐</td> </tr> <tr> <td>Crimp/Kink/Ripple/Wave ☐</td> <td>Inspection Incomplete/Unqualified ☐</td> <td>Wrong Stock Pulled ☐</td> <td>Part Lost/Missing ☐</td> </tr> <tr> <td>Cuffs ☐</td> <td>Contamination ☐</td> <td>Out of Sequence ☐</td> <td>Part Moved ☐</td> </tr> <tr> <td>Crushing ☐</td> <td>Countersink ☐</td> <td>Off-set ☐</td> <td>☒ Drawing ☐</td> </tr> <tr> <td>Heat Treat ☐</td> <td>Cut Too Short ☐</td> <td>Mislabeled ☐</td> <td>Finish ☐</td> </tr> <tr> <td>Wave/Twist in Tube ☐</td> <td>Instructions Incomplete/Unclear ☐</td> <td>Fit/Function ☐</td> <td>Misread ☐</td> </tr> <tr> <td>Marks/Chatter ☐</td> <td>Drill Holes ☐</td> <td>Misaligned/off center ☐</td> <td>Turning Sequence ☐</td> </tr> </table>						Pressure/Forced ☐	Temperature/Cure ☐	Power Loss/Surge ☐	Positioned Wrong ☐	Bending ☐	Set-up ☐	Folio/Program ☐	Outside Dimensions ☐	Centre Not Concentric ☐	BOM/Route ☐	Grain ☐	Over/Under tolerance ☐	Cracks ☐	Broken/Damage/Defect ☐	Weld ☐	Part Incorrect ☐	Crimp/Kink/Ripple/Wave ☐	Inspection Incomplete/Unqualified ☐	Wrong Stock Pulled ☐	Part Lost/Missing ☐	Cuffs ☐	Contamination ☐	Out of Sequence ☐	Part Moved ☐	Crushing ☐	Countersink ☐	Off-set ☐	☒ Drawing ☐	Heat Treat ☐	Cut Too Short ☐	Mislabeled ☐	Finish ☐	Wave/Twist in Tube ☐	Instructions Incomplete/Unclear ☐	Fit/Function ☐	Misread ☐	Marks/Chatter ☐	Drill Holes ☐	Misaligned/off center ☐	Turning Sequence ☐
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OTHER: _____																																																																							

Work Order ID 164763

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164763

Page 5

Item ID: D4680-041 Accept ***N900040100*** Setup Start ***NS1***
Revision ID: URF 17-547 Stop ***NS2***
Item Name: Skidtube Assembly
Start Date: 8/3/2017 Start Qty: 1.00 ***1*** Cust Item ID:
Required Date: 9/1/2017 Req'd Qty: 1.00 ***1*** Customer:
Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
180 *180* QC Quality Control	QC5- Inspect part completeness to step on W/O Memo	0.00 0.02							DAS 16 9-89 7/28/17
210 *210* HandFinish Hand Finishing	Pressure Wash per QSI005 4.3 Memo Re-alodine tube as per QSI 005 section 4.1.2.1 do not acid etch.	0.00 0.41				①	Ø		2017-09-27 JSL
220 *220* Powdercoat Powder Coating	White Gloss(Ref:4.3.5.1) per QSI005 4.3-Alum Memo START TIME: _____ OVEN TEMPERATURE: _____ FINISH TIME: _____	0.00 0.27							

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐					
Date :		Step #:		QTY Effective :				MRB (QSI042) Approval Completed By _____ Lead hand / Supervisor Approval Verification _____ QC / QA Coordinator Approval _____	
Description Work Order Deviation				Disposition					
Root Cause Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐ No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐		FAULT CATEGORY Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐ Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐ Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Misabeled ☐ Fit/Function ☐ Misaligned/off center ☐ Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐							
		OTHER : ☐							

Work Order ID 164763

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Page 6

Item ID: D4680-041**Accept*****N900040100*****Setup Start *NS1*****Revision ID:** URF 17-547**Item Name:** Skidtube Assembly**Stop *NS2*****Start Date:** 8/3/2017 **Start Qty:** 1.00***1*****Cust Item ID:****Required Date:** 9/1/2017 **Req'd Qty:** 1.00***1*****Customer:****Reference:****Approvals:** **Process Plan:** _____ **Date:** _____ **Tooling:** _____ **Date:** _____**Run Start *NR1*****QC:** _____ **Date:** _____ **SPC (Y/N):** _____ **Date:** _____**Stop *NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
230	QC3- Inspect Part Finish	0.00							
230									
QC	Memo	0.01							
Quality Control									
260		0.00							
260	HandFinishing								
HandFinish	Memo	1.01							
Hand Finishing	1- Install Ground Wire inserts as per Dwg D4680.								
	2-Inspect for Foreign objects								
	3- Install Fwd & Aft caps as per Dwg D4680 and Detail "A" & "B". Fastener must be install wet as per note (9).								
	A/R 241 Sika Flex Batch: _____ Exp Date: _____								
	4- Wing Walk as per Dwg D4680 and QSI 005 4.4 Batch: _____								

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐					
Date :		Step #:		QTY Effective :			MRB (QSI042) Approval		
Description Work Order Deviation				Disposition				Completed By Lead hand / Supervisor Approval Verification QC / QA Coordinator Approval	
Root Cause		FAULT CATEGORY							
Environment ☐	No Re-verification ☐	Pressure/Forced ☐	Temperature/Cure ☐	Power Loss/Surge ☐	Positioned Wrong ☐				
Design ☐	Operator ☐	Bending ☐	Set-up ☐	Folio/Program ☐	Outside Dimensions ☐				
Doc/Data ☐	Offset/Setup ☐	Centre Not Concentric ☐	BOM/Route ☐	Grain ☐	Over/Under tolerance ☐				
Equip/Tooling ☐	Supplier ☐	Cracks ☐	Broken/Damage/Defect ☐	Weld ☐	Part Incorrect ☐				
Handling/Pre ☐	Training ☐	Crimp/Kink/Ripple/Wave ☐	Inspection Incomplete/Unqualified ☐	Wrong Stock Pulled ☐	Part Lost/Missing ☐				
Material ☐	Use for Testing ☐	Cuffs ☐	Contamination ☐	Out of Sequence ☐	Part Moved ☐				
Internal Transport ☐	Poor Information ☐	Crushing ☐	Countersink ☐	Off-set ☐	Drawing ☐				
Tribal Knowledge ☐	Rushing ☐	Heat Treat ☐	Cut Too Short ☐	Mislabeled ☐	Finish ☐				
LOA ☐	Product Improvement ☐	Wave/Twist in Tube ☐	Instructions Incomplete/Unclear ☐	Fit/Function ☐	Misread ☐				
Substation ☐	Process Improvement ☐	Marks/Chatter ☐	Drill Holes ☐	Misaligned/off center ☐	Turning Sequence ☐				
Past Expiry Date ☐	Manufacturing Process ☐								
Misidentified ☐	Past Due ☐	OTHER :							

Work Order ID 164763

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Page 7

Item ID: D4680-041 Accept ***N900040100*** Setup Start ***NS1***
Revision ID: URF 17-547 Stop ***NS2***
Item Name: Skidtube Assembly
Start Date: 8/3/2017 Start Qty: 1.00 ***1*** Cust Item ID:
Required Date: 9/1/2017 Req'd Qty: 1.00 ***1*** Customer:
Reference:

Approvals: Process Plan: _____ Date: _____ Tooling: _____ Date: _____ Run Start ***NR1***
QC: _____ Date: _____ SPC (Y/N): _____ Date: _____ Stop ***NR2***

Sequence ID/ Work Center ID	Operation Description	Set Up/ Run Hours	Tool ID	Tool #	Plan Code	Accept Qty	Reject Qty	Reject Number	Insp. Stamp
270 *270* QC Quality Control	QC5- Inspect part completeness to step on W/O Memo	0.00 0.02							
300 *300* Packaging Packaging	Identify as per dwg & Stock Location: _____ Packaging Memo	0.00 0.01							
310 *310* QC Quality Control	QC21- Final Inspection - Work Order Release Memo	0.00 0.10							

POSITIVE RECORD JUL 28 2017

EFFECTIVE

DAS

AUTH

RELEASED

9

DATE 17.11.15

9-89

@ct rev F

DQA: _____ Date: _____

**WORK ORDER NON-CONFORMANCE / UPDATE**

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐					
Date : _____		Step #: _____		QTY Effective : _____			MRB (QSI042) Approval Completed By _____ Lead hand / Supervisor Approval Verification _____ QC / QA Coordinator Approval _____		
Description Work Order Deviation				Disposition					
				DEFECTED _____ REJECT _____ HOLDING _____					
Root Cause Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐ No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐		FAULT CATEGORY Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐ Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐ Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Misabeled ☐ Fit/Function ☐ Misaligned/off center ☐ Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐		OTHER : _____					

Picklist Print

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Page 1

Work Order ID: 164763

164763

Parent Item: D4680-041

D4680-041

Parent Item Name: Skidtube Assembly

Start Date: 8/3/2017

Required Date: 9/1/2017

Start Qty: 1.00

Required Qty: 1.00

Comments: IPP REV:A 13.04.16 NEW ISSUE DD VERF:JLM IPP
REV:B 13.08.08 PB2 DD VERF:JLM IPP REV:C
13.09.10 PB3 DD VERF:JLM IPP REV:D 13.11.14
AS PER DWG REV.B DD VERF:JLM IPP REV:C 14.11.24 AS PER
DWG REV.C DD VERF:JLM IPP REV:D 15.06.10 AS PER DWG
REV.D DD VERF:JLM IPP REV:E 16.03.23 AS PER DWG REV.E
DD VERF:JLM

Component Item ID/ Item Name	Replacement Item ID	Mfg/ Purch	Bin Item	Primary Location	Last Location	Route Seq ID	Unit of Measure	Qty on Hand	Qty per Kit	Total Qty	Qty Issued	Date Issued	Status
---------------------------------	------------------------	---------------	-------------	---------------------	------------------	-----------------	--------------------	----------------	-------------	--------------	---------------	----------------	--------

AN526C1032R10

Purchased

No

260

Each

117.0000

2

2

AN526C1032R10

Screw

Location

Loc Qty

Loc Code

FP001

17

m135133

17

ST327

100

m137851

100

CR3212-5-05

Purchased

No

170

Each

300.0000

68

68

CR3212-5-05

Rivet

BE170810

Location

Loc Qty

Loc Code

CCK003

300

m138040

300

D5304-1

Manufactured

No

260

Each

24.0000

2

2

D5304-1

Crossbolt Spacer

BE17-09-21

Location

Loc Qty

Loc Code

LG001

24

145050

4

146516

1

161952

19

2

DQA: _____ Date: _____

**WORK ORDER NON-CONFORMANCE / UPDATE**

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐					
Date : _____		Step #: _____		QTY Effective : _____			MRB (QSI042) Approval		
Description Work Order Deviation				Disposition				Completed By	
								Lead hand / Supervisor Approval Verification	
								QC / QA Coordinator Approval	
Root Cause		FAULT CATEGORY							
Environment ☐	No Re-verification ☐	Pressure/Forced ☐	Temperature/Cure ☐	Power Loss/Surge ☐	Positioned Wrong ☐				
Design ☐	Operator ☐	Bending ☐	Set-up ☐	Folio/Program ☐	Outside Dimensions ☐				
Doc/Data ☐	Offset/Setup ☐	Centre Not Concentric ☐	BOM/Route ☐	Grain ☐	Over/Under tolerance ☐				
Equip/Tooling ☐	Supplier ☐	Cracks ☐	Broken/Damage/Defect ☐	Weld ☐	Part Incorrect ☐				
Handling/Pre ☐	Training ☐	Crimp/Kink/Ripple/Wave ☐	Inspection Incomplete/Unqualified ☐	Wrong Stock Pulled ☐	Part Lost/Missing ☐				
Material ☐	Use for Testing ☐	Cuffs ☐	Contamination ☐	Out of Sequence ☐	Part Moved ☐				
Internal Transport ☐	Poor Information ☐	Crushing ☐	Countersink ☐	Off-set ☐	Drawing ☐				
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LOA ☐	Product Improvement ☐	Wave/Twist in Tube ☐	Instructions Incomplete/Unclear ☐	Fit/Function ☐	Misread ☐				
Substation ☐	Process Improvement ☐	Marks/Chatter ☐	Drill Holes ☐	Misaligned/off center ☐	Turning Sequence ☐				
Past Expiry Date ☐	Manufacturing Process ☐	OTHER : _____							
Misidentified ☐	Past Due ☐								

Picklist Print

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Page 2

Work Order ID: 164763

164763

Parent Item: D4680-041

D4680-041

Parent Item Name: Skidtube Assembly

Start Date: 8/3/2017

Required Date: 9/1/2017

Start Qty: 1.00

Required Qty: 1.00

D5520-1

Manufactured No

120

Each

0.0000

2

2

D5520-1

Doubler

NAS1149C0332R

Purchased No

260

Each

3,854.000

5

5

NAS1149C0332R

WASHER

**

**

BE17-08-03

8163670.42 *

Location

Loc Qty

Loc Code

FP001

798

m137951

798

GA

502

m133284

22

m136444

480

ST260a

1946

m137851

1946

ST266

608

m137381

608

D4680-041-BENT

Manufactured No

120

Each

8.0000

1

1

D4680-041-BENT

Extrusion Bent

**

BE

BE17-08-03

Location

Loc Qty

Loc Code

LG002

8

163755

8

D4681-041

Manufactured No

170

Each

5.0000

1

1

D4681-041

Web Assembly

**

BE17-08-14

Location

Loc Qty

Loc Code

LG002

5

146247

5

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Shop Packet Print

Page 2

DQA: _____ Date: _____

WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐			
Date: _____	Step #: _____	QTY Effective: _____		MRB (QSI042) Approval	
Description Work Order Deviation		Disposition		Completed By	
				 Lead hand / Supervisor Approval Verification	
				QC / QA Coordinator Approval	
Root Cause Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐ No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐		FAULT CATEGORY Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐ Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐ Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Misabeled ☐ Fit/Function ☐ Misaligned/off center ☐ Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐			
OTHER: _____					

Picklist Print

Friday, July 28, 2017 9:30:10 AM

Page 3

Work Order ID: 164763

164763

Parent Item: D4680-041

D4680-041

Parent Item Name: Skidtube Assembly

Start Date: 8/3/2017

Required Date: 9/1/2017

Start Qty: 1.00

Required Qty: 1.00

D4686-1 Manufactured No

260 Each 64.0000 8 8

D4686-1

Spacer

BE1709-21

Location

Loc Qty

Loc Code

LG001

64

145075

44

146515

20

8

D4753-1 Manufactured No

260 Each 53.0000 16 16

D4753-1

Doubler

BE1709-18
2164991 x16

Location

Loc Qty

Loc Code

LG001

53

153498

7

161929

23

162891

23

AEIS-1032-130 AEIS8-1032-130 Purchased No

260 Each 0.0000 3 3

AFI S-1032-130

Rivnut

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐					
Date :		Step #:		QTY Effective :			MRB (QSI042) Approval		
Description Work Order Deviation				Disposition				Completed By Lead hand / Supervisor Approval Verification QC / QA Coordinator Approval	
Root Cause		FAULT CATEGORY							
Environment ☐	No Re-verification ☐	Pressure/Forced ☐	Temperature/Cure ☐	Power Loss/Surge ☐	Positioned Wrong ☐				
Design ☐	Operator ☐	Bending ☐	Set-up ☐	Folio/Program ☐	Outside Dimensions ☐				
Doc/Data ☐	Offset/Setup ☐	Centre Not Concentric ☐	BOM/Route ☐	Grain ☐	Over/Under tolerance ☐				
Equip/Tooling ☐	Supplier ☐	Cracks ☐	Broken/Damage/Defect ☐	Weld ☐	Part Incorrect ☐				
Handling/Pre ☐	Training ☐	Crimp/Kink/Ripple/Wave ☐	Inspection Incomplete/Unqualified ☐	Wrong Stock Pulled ☐	Part Lost/Missing ☐				
Material ☐	Use for Testing ☐	Cuffs ☐	Contamination ☐	Out of Sequence ☐	Part Moved ☐				
Internal Transport ☐	Poor Information ☐	Crushing ☐	Countersink ☐	Off-set ☐	Drawing ☐				
Tribal Knowledge ☐	Rushing ☐	Heat Treat ☐	Cut Too Short ☐	Mislabeled ☐	Finish ☐				
LOA ☐	Product Improvement ☐	Wave/Twist in Tube ☐	Instructions Incomplete/Unclear ☐	Fit/Function ☐	Misread ☐				
Substation ☐	Process Improvement ☐	Marks/Chatter ☐	Drill Holes ☐	Misaligned/off center ☐	Turning Sequence ☐				
Past Expiry Date ☐	Manufacturing Process ☐								
Misidentified ☐	Past Due ☐	OTHER :							

Picklist Print

Friday, July 28, 2017 9:30:10 AM

Page 4

Work Order ID: 164763

164763

Parent Item: D4680-041

D4680-041

Parent Item Name: Skidtube Assembly

Start Date: 8/3/2017

Required Date: 9/1/2017

Start Qty: 1.00

Required Qty: 1.00

AN3C4A

Purchased

No

260

Each

1,141.000

3

3

AN3C4A

Bolt

Location

Loc Qty

Loc Code

FG

20

122814

20

FP001

183

M136450

23

M136740

8

M136986

20

M137075

43

M137164

2

M137361

5

M137820

82

OVER002

925

M137507

150

M137587

250

M137963

400

M138040

125

ST350

13

M135704

13

MS20601-AD4W3

Purchased

No

260

Each

409.0000

32

32

MS20601-AD4W3

Rivet

M138238 x 32

Location

Loc Qty

Loc Code

CCK004

100

m137963

100

LG001

199

m137459

3

m137820

196

ST308

110

m137587

110

Friday, July 28, 2017 9:30:10 AM

Shop Packet Print

Page 4

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____		DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐		AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐					
Date :		Step #:		QTY Effective :			MRB (QSI042) Approval Completed By _____ Lead hand / Supervisor Approval Verification _____ QC / QA Coordinator Approval _____		
Description Work Order Deviation				Disposition					
Root Cause Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐ No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐		FAULT CATEGORY Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐ Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐ Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Mislabeled ☐ Fit/Function ☐ Misaligned/off center ☐ Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐		OTHER : ☐					

Picklist Print

Friday, July 28, 2017 9:30:10 AM

Page 5

Work Order ID: 164763

164763

Parent Item: D4680-041

D4680-041

Parent Item Name: Skidtube Assembly

Start Date: 8/3/2017

Required Date: 9/1/2017

Start Qty: 1.00

Required Qty: 1.00

D2965

Manufactured No

260

Each

28.0000

1

1

D2965

Cap

Location

Loc Qty

Loc Code

FP001

28

127852

28

AN3C5A

Purchased

No

260

Each

1,314.000

2

2

AN3C5A

Bolt

Location

Loc Qty

Loc Code

FG

5

122800

5

FP001

443

M137361

443

OVER002

800

M137710

200

M137963

600

ST350

66

M135442

66

D2965-3

Manufactured

No

260

Each

66.0000

1

1

D2965-3

Cap

Location

Loc Qty

Loc Code

FP001

66

126369

66

DQA: _____ Date: _____



WORK ORDER NON-CONFORMANCE / UPDATE

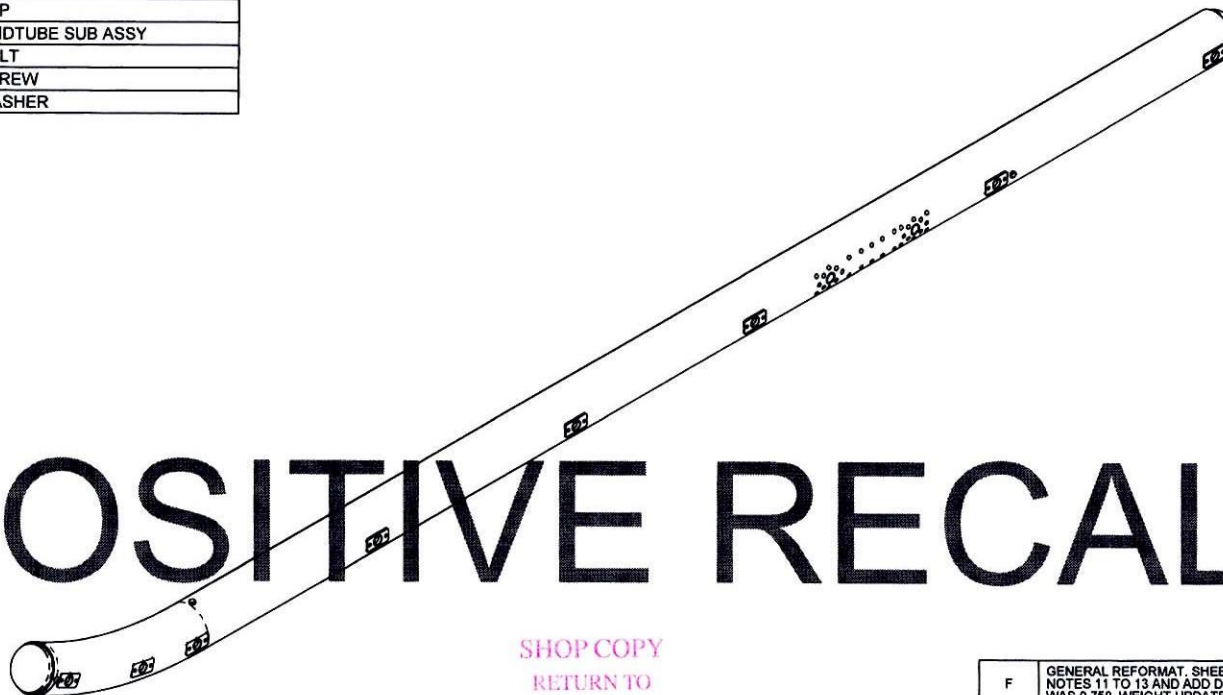
QA Closed: _____ Date: _____

Work Order update only ☐

Work Order: _____ Part No. _____ NCR No. _____	DISPOSITION Rework ☐ Scrap ☐ Use-as-is ☐ Suspected Unapproved ☐	AGAINST DEPARTMENT/PROCESS Skid-tube ☐ Machining ☐ Thermoforming ☐ Large Fab ☐ Cross tube ☐ Small Fab ☐ Finishing ☐ Composite ☐ Water Jet ☐ Prod. Eng. Coord. ☐ Rec/Store/Packaging ☐ Supplier ☐ Engineering ☐ Quality ☐ Other ☐			
Date : _____	Step #: _____	QTY Effective : _____		MRB (QSI042) Approval	
Description Work Order Deviation		Disposition			
				Completed By	
				Lead hand / Supervisor Approval Verification	
				QC / QA Coordinator Approval	
Root Cause Environment ☐ Design ☐ Doc/Data ☐ Equip/Tooling ☐ Handling/Pre ☐ Material ☐ Internal Transport ☐ Tribal Knowledge ☐ LOA ☐ Substation ☐ Past Expiry Date ☐ Misidentified ☐ No Re-verification ☐ Operator ☐ Offset/Setup ☐ Supplier ☐ Training ☐ Use for Testing ☐ Poor Information ☐ Rushing ☐ Product Improvement ☐ Process Improvement ☐ Manufacturing Process ☐ Past Due ☐		FAULT CATEGORY Pressure/Forced ☐ Bending ☐ Centre Not Concentric ☐ Cracks ☐ Crimp/Kink/Ripple/Wave ☐ Cuffs ☐ Crushing ☐ Heat Treat ☐ Wave/Twist in Tube ☐ Marks/Chatter ☐ Temperature/Cure ☐ Set-up ☐ BOM/Route ☐ Broken/Damage/Defect ☐ Inspection Incomplete/Unqualified ☐ Contamination ☐ Countersink ☐ Cut Too Short ☐ Instructions Incomplete/Unclear ☐ Drill Holes ☐ Power Loss/Surge ☐ Folio/Program ☐ Grain ☐ Weld ☐ Wrong Stock Pulled ☐ Out of Sequence ☐ Off-set ☐ Misabeled ☐ Fit/Function ☐ Misaligned/off center ☐ Positioned Wrong ☐ Outside Dimensions ☐ Over/Under tolerance ☐ Part Incorrect ☐ Part Lost/Missing ☐ Part Moved ☐ Drawing ☐ Finish ☐ Misread ☐ Turning Sequence ☐			
OTHER : _____					

ITEM	QTY -041	P/N	DESCRIPTION
	X	D4680-041	SKIDTUBE
1	1	D2965	CAP
2	1	D2965-3	CAP
3	1	D4680-043	SKIDTUBE SUB ASSY
4	2	AN3C5A	BOLT
5	2	AN526C1032R10	SCREW
6	2	NAS1149C0332R	WASHER

POSITIVE RECALL



SHOP COPY
RETURN TO
ENGINEERING
UNCONTROLLED COPY
SUBJECT TO AMENDMENT
WITHOUT NOTICE
WORK ORDER
NO. 164763
UM 17/7/28

NOTES:

- 1) MATERIAL: N/A
- 2) FINISH: PAINT TOP SURFACE OF SKIDTUBE WITH MIL-W-5044 ANTI-SKID PAINT (WING WALK) AS INDICATED TO 1.00 ABOVE CENTERLINE PER QSI 005 SECTION 4.4
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: N/A
- 6) IDENTIFICATION: IDENTIFY WITH DART P/N "D4680-041" AND B/N PER QSI 044 METHOD 6.4 ON INNER RADIUS OF SKIDTUBE BEFORE INSTALLING D2965 CAP
- 7) WEIGHT: 19.3 lbs
- 8) SEAL FAYING SURFACES WITH SIKAFLEX -241/-291 OR PROSEAL 890/1422 OR MIL-S-8802 CLASS B-2 SEALANT
- 9) INSTALL FASTENERS WET WITH SIKAFLEX -241/-291 OR PROSEAL 890/1422 OR MIL-S-8802 CLASS B-2 SEALANT

F	GENERAL REFORMAT. SHEET 3: ADD ITEMS 6 & 11 ADD NOTES 11 TO 13 AND ADD DETAIL H. SHEET 5: Ø0.188 WAS 0.750. WEIGHT UPDATE. ADD PROSEAL 1422	AJS	17.03.30
E	GROUND HANDLING CROSSBOLT SPACERS NOW SWAGED. WAS WELDED. REMOVED D3492-055 PLUG ASSEMBLIES	AP	15.11.02
D	MOVED AFT GROUNDING FASTENER HOLE AFT 0.25 DUE TO INTERFERENCE. ADDED NOTE 9 (SHT 1). GROUNDING STRAP WASHERS NOW STAINLESS	AP	15.03.04
C	NAS1149F0332P WAS AN960-10L. AN526C1032R10 WAS AN526C1032-10. FWD GROUNDING STRAP FASTENER MOVED AFT (C5-3). Ø0.750 WAS Ø0.758 (B4-3).	AP	14.07.29
B	FWD CAP WAS D2965. NOW D2965-3. VARIOUS DIMENSIONAL CHANGES. D3492-055 PLUG ASSY WAS D3492-051. SWAGING DIMENSION NOW 0.850 WAS 0.861 (D6-2). ADDED DETAIL H (C2-3). MATERIAL D2962-150 WAS D2962-131 (A7-3). GROUND HANDLING THRU HOLES NOW WELDED. ADDED SECTION G-G (D3-2)	AP	13.09.10
A	NEW ISSUE	AP	13.02.13
REV.	DESCRIPTION	BY	DATE
DESIGN	AP	DART AEROSPACE USA, INC.	
DRAWN	AJS	EUGENE, OR	
CHECKED	ML	DRAWING NO.	REV. F
MFG. APPR.	DP	D4680	SHEET 1 OF 5
APPROVED	WM	TITLE	SCALE
DE APPR.	DS	SKIDTUBE	NTS
DATE	17.03.30	COPYRIGHT © 2013 BY DART AEROSPACE USA, INC. THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE USA, INC.	

AN526C1032R10
SCREW
2 PL

D2965-3
CAP

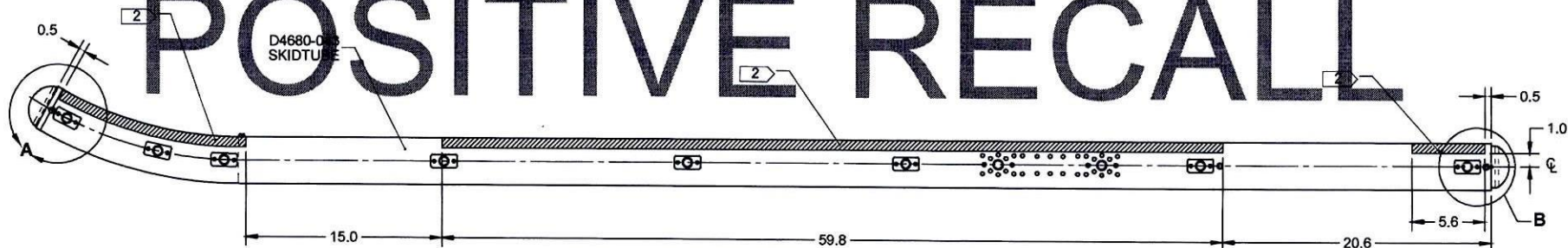
DETAIL A
SCALE 4X

D2965
CAP

AN3C5A BOLT
NAS1149C0332R WASHER
2 PL

DETAIL B
SCALE 4X

POSITIVE RECALL



DESIGN	AP	DART AEROSPACE USA, INC.	
DRAWN	AJS	EUGENE, OR	
CHECKED	ML	DRAWING NO.	REV. F
MFG. APPR.	DP	D4680	SHEET 2 OF 5
APPROVED	WM	TITLE	SCALE
DE APPR.	DS	SKIDTUBE	NTS
DATE	17.03.30	COPYRIGHT © 2013 BY DART AEROSPACE USA, INC. THIS DOCUMENT IS PRIVATE AND CONFIDENTIAL AND IS SUPPLIED ON THE EXPRESS CONDITION THAT IT IS NOT TO BE USED FOR ANY PURPOSE OR COPIED OR COMMUNICATED TO ANY OTHER PERSON WITHOUT WRITTEN PERMISSION FROM DART AEROSPACE USA, INC.	

ITEM	QTY	P/N	DESCRIPTION
	X	D4680-043	SKIDTUBE SUB ASSY
1	1	D4680-1	SKIDTUBE
2	1	D4681-041	WEB ASSY
3	8	D4686-1	SPACER
4	16	D4753-1	DOUBLER
5	2	D5304-1	CROSSBOLT SPACER
6	2	D5520-1	DOUBLER
7	3	AN3C4A	BOLT
8	32	MS20601AD4V3	RIVET, BLIND, CSK
9	3	NAS1149C0332R	WASHER
10	3	AELS-1032-130	INSERT
11	68	CR3212-5-05	CSK RIVET, CHERRY MAX

OPEN TO
Ø0.750
THRU 2 PL

[13] [12] CR3212-5-05
CSK RIVET, CHERRY MAX
34 PL PER DOUBLER

DETAIL H
SCALE 4X

[11] D5520-1 DOUBLER
2 PL

POSITIVE RECALL

D4680-043 SKIDTUBE SUB ASSY

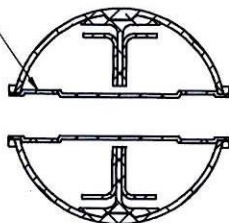
[9] D4681-041
WEB ASSY

NOTES:

- 1) MATERIAL: N/A
- 2) FINISH: APPLY CHEMICAL CONVERSION COATING PER DART QSI 005 4.1 PRIOR TO INSTALLING D4681-041 WEB. POWDER COAT WHITE (REF 4.3.5.1) PER DART QSI 005 4.3
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: N/A
- 6) IDENTIFICATION: NONE
- 7) WEIGHT: 18.6 lbs
- 8) SEAL ALL MATING SURFACES USING PROSEAL 890/1422 OR MIL-S-8802 CLASS B2 SEALANT
- 9) INSERT D4681-041 WEB INTO D4680-1 SKIDTUBE IN LOCATION SHOWN OFF AFT END OF SKIDTUBE AND BOND WEB INTO OUTER TUBE WITH NON-STRUCTURAL SIKAFLEX -241/-291 ADHESIVE PER DART QSI 015
- 10) INSTALL D4686-1 SPACER AFTER INSTALLING D4753-1 DOUBLERS
- 11) LOCATE THE D5520-1 DOUBLER USING THE Ø0.188 PILOT HOLES ON THE SKIDTUBE AND DOUBLER
- 12) LOCATE QTY (34) HOLES ONTO THE SKIDTUBE PER D5520-1 DOUBLER AND DRILL Ø0.161 THRU SKIDTUBE AND DOUBLER USING DT10309
- 13) COUNTERSINK THE SKIDTUBE Ø0.286 X 100" (34 PL) AND INSTALL EACH D5520-1 DOUBLER USING QTY (34) CR3212-5-05 CSK RIVETS

DESIGN	AP	DART AEROSPACE USA, INC.	
DRAWN	AJS	EUGENE, OR	
CHECKED	ML	DRAWING NO.	REV. F
MFG. APPR.	DP	D4680	SHEET 3 OF 5
APPROVED	WM	TITLE	SCALE
DE APPR.	DS	SKIDTUBE	NTS
DATE	17.03.30	COPYRIGHT © 2013 BY DART AEROSPACE USA, INC.	
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D4686-1
SPACER

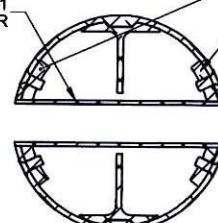


INSTALL D4686-1 SPACER AS FOLLOWS (8 PL)
AFTER INSTALLING D4753-1 DOUBLERS PER DETAIL D

1. INSERT D4686-1 SPACER
2. SWAGE TO $\phi 0.650 +0.010/-0.000 \times 1.0$
DEEP PER QSI 002
3. TRIM/GRIND FLUSH PER QSI 002

SECTION C-C
SCALE 4X
8 PL

D5304-1
CROSSBOLT SPACER



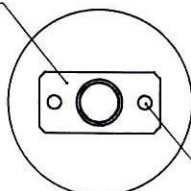
D5520-1 DOUBLER
REF

INSTALL D5304-1 SPACER AS FOLLOWS (2 PL)

1. INSERT D5304-1 SPACER
2. SWAGE TO $\phi 0.565 +0.005/-0.000 \times 1.0$
DEEP PER QSI 002
3. OPEN THRU HOLE TO $\phi 0.625$

SECTION G-G
SCALE 4X
2 PL

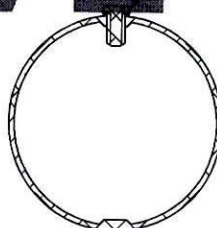
D4753-1
DOUBLER



MS20601AD4W3
RIVET, BLIND, CSK
2 PL

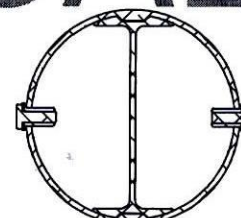
DETAIL D
16 PL (BOTH SIDES)
SCALE 4X

AN3C4A BOLT
NAS1149C0332R WASHER
AELS-1032-130 INSERT



SECTION E-E
SCALE 4X

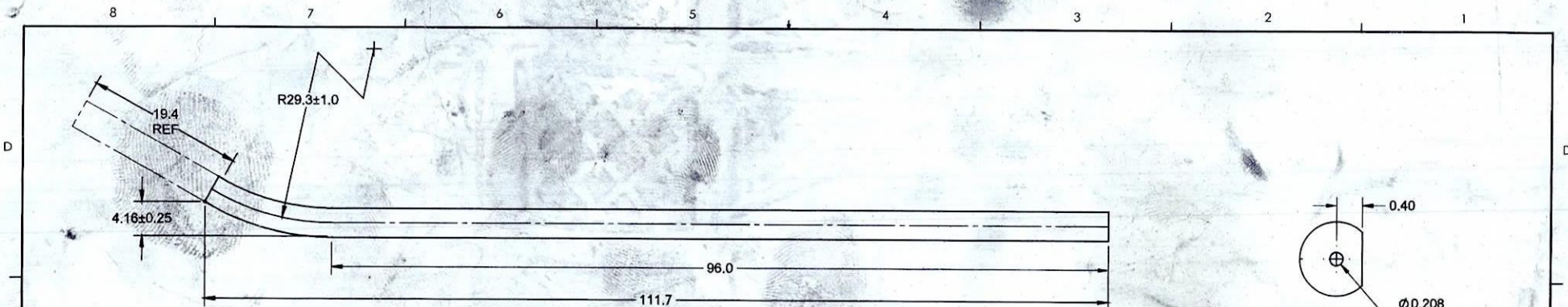
AN3C4A BOLT
NAS1149C0332R WASHER
AELS-1032-130 INSERT
2 PL



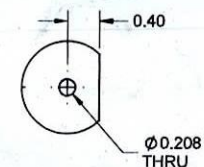
SECTION F-F
SCALE 4X

POSITIVE RECALL

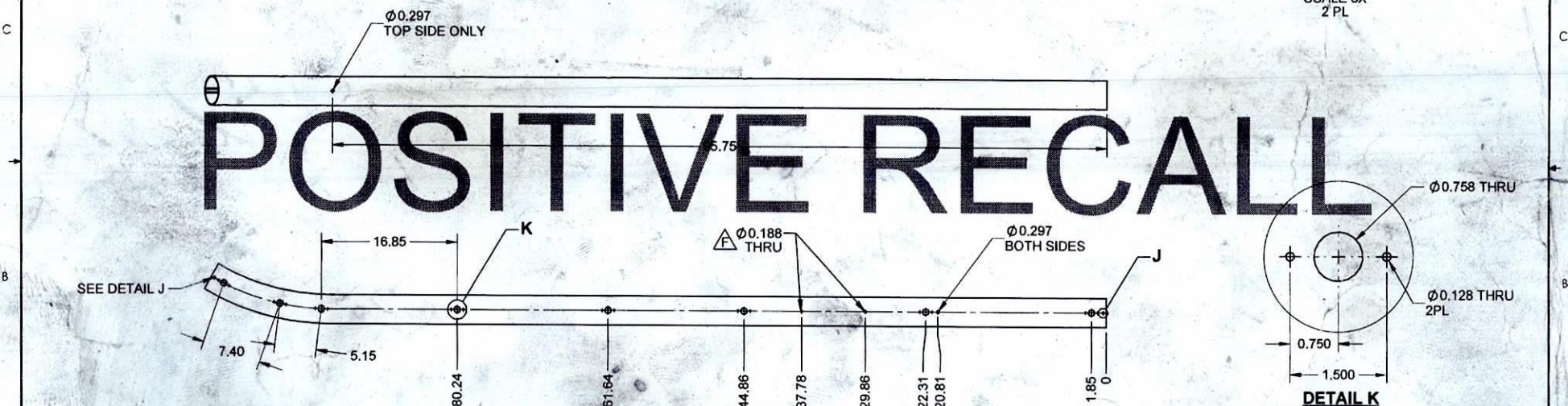
DESIGN	AP	DART AEROSPACE USA, INC.	
DRAWN	AJS	EUGENE, OR	
CHECKED	ML	DRAWING NO.	REV. F
MFG. APPR.	DP	D4680	SHEET 4 OF 5
APPROVED	VM	TITLE	SCALE
DE APPR.	DS	SKIDTUBE	NTS
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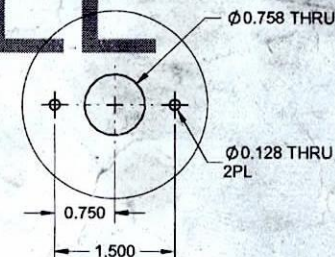
D4680-1 SKIDTUBE BENDING/TRIMMING DETAIL



DETAIL J
SCALE 8X
2 PL



D4680-1 SKIDTUBE DRILLING DETAIL



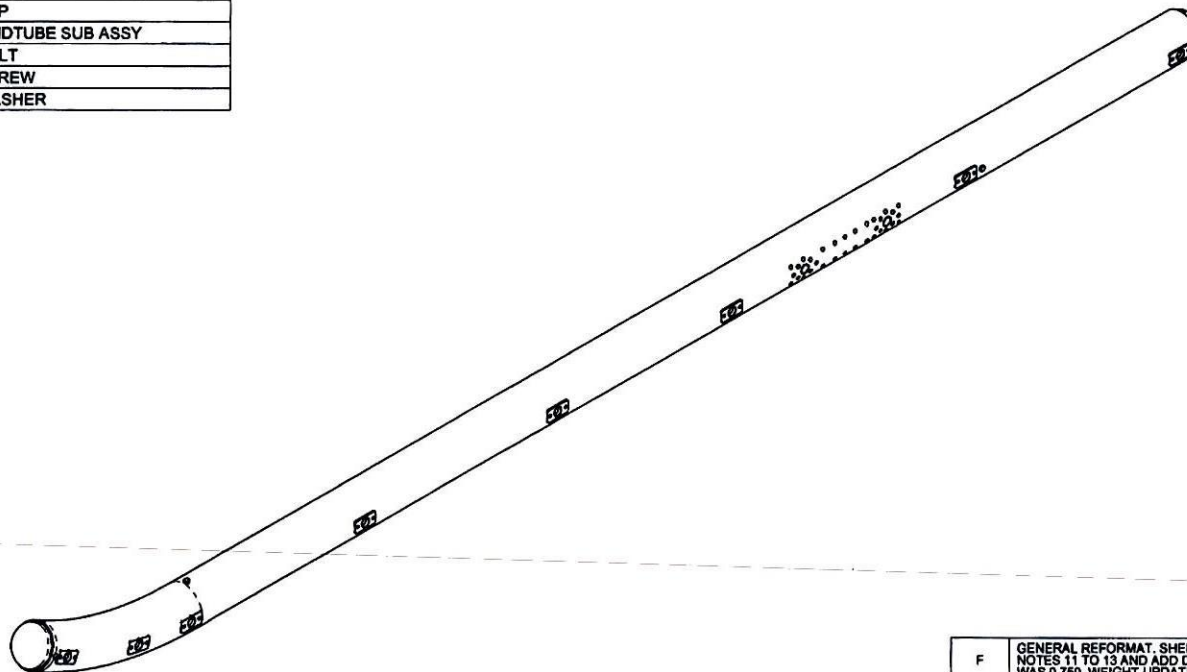
DETAIL K
SCALE 8X
8 PL

NOTES:

- 1) MATERIAL: MAKE FROM D2962-150 EXTRUSION
- 2) FINISH: CHEMICAL CONVERSION COAT PER DART QSI 005 4.1
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: 0.005 TO 0.010 MAX
- 6) IDENTIFICATION: NONE
- 7) WEIGHT: 11.36 lbs

DESIGN	AP	DART AEROSPACE USA, INC.	
DRAWN	AJS	EUGENE, OR	
CHECKED	ML	DRAWING NO.	REV. F
MFG. APPR.	DP	D4680	SHEET 5 OF 5
APPROVED	WM	TITLE	SCALE
DE APPR.	DS	SKIDTUBE	NTS
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ITEM	QTY -041	P/N	DESCRIPTION
	X	D4680-041	SKIDTUBE
1	1	D2965	CAP
2	1	D2965-3	CAP
3	1	D4680-043	SKIDTUBE SUB ASSY
4	2	AN3C5A	BOLT
5	2	AN526C1032R10	SCREW
6	2	NAS1149C0332R	WASHER



NOTES:

- 1) MATERIAL: N/A
- 2) FINISH: PAINT TOP SURFACE OF SKIDTUBE WITH MIL-W-5044 ANTI-SKID PAINT (WING WALK) AS INDICATED TO 1.00 ABOVE CENTERLINE PER QSI 005 SECTION 4.4
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: N/A
- 6) IDENTIFICATION: IDENTIFY WITH DART P/N "D4680-041" AND B/N PER QSI 044 METHOD 6.4 ON INNER RADIUS OF SKIDTUBE BEFORE INSTALLING D2965 CAP
- 7) WEIGHT: 19.3 lbs
- 8) SEAL FAYING SURFACES WITH SIKAFLEX -241/-291 OR PROSEAL 890/1422 OR MIL-S-8802 CLASS B-2 SEALANT
- 9) INSTALL FASTENERS WET WITH SIKAFLEX -241/-291 OR PROSEAL 890/1422 OR MIL-S-8802 CLASS B-2 SEALANT

F	GENERAL REFORMAT. SHEET 3: ADD ITEMS 8 & 11 ADD NOTES 11 TO 13 AND ADD DETAIL H. SHEET 5: Ø0.188 WAS 0.750. WEIGHT UPDATE. ADD PROSEAL 1422	AJS	17.03.30
E	GROUND HANDLING CROSSBOLT SPACERS NOW SWAGED, WAS WELDED. REMOVED D3482-055 PLUG ASSEMBLIES	AP	15.11.02
D	MOVED AFT GROUNDING FASTENER HOLE AFT 0.25 DUE TO INTERFERENCE. ADDED NOTE 9 (SHT 1), GROUNDING STRAP WASHERS NOW STAINLESS	AP	15.03.04
C	NAS1149F0332P WAS AN960-10L. AN526C1032R10 WAS AN526C1032-10. FWD GROUNDING STRAP FASTENER MOVED AFT (C5-3). Ø0.750 WAS Ø0.756 (B4-3).	AP	14.07.29
B	FWD CAP WAS D2965. NOW D2965-3. VARIOUS DIMENSIONAL CHANGES. D3492-055 PLUG ASSY WAS D3492-051. SWAGING DIMENSION NOW 0.850 WAS 0.661 (D6-2). ADDED DETAIL H (C2-3). MATERIAL D2962-150 WAS D2962-131 (A7-3). GROUND HANDLING THRU HOLES NOW WELDED. ADDED SECTION G-G (D3-2)	AP	13.09.10
A	NEW ISSUE	AP	13.02.13
REV.	DESCRIPTION	BY	DATE
DESIGN	AP	DART AEROSPACE USA, INC. EUGENE, OR	
DRAWN	AJS		
CHECKED	ML		
MFG. APPR.	DP		
APPROVED	WM		
DE APPR.	DS	SKIDTUBE	
DATE	17.03.30	REV. F	SHEET 1 OF 5
		SCALE	NTS
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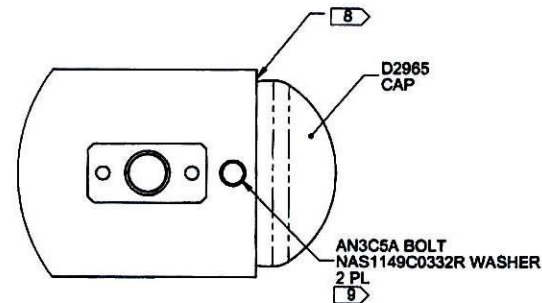
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2017-08-11
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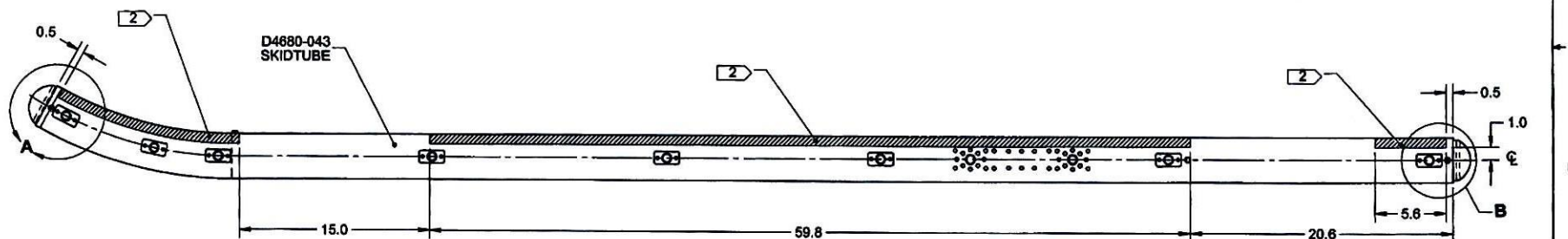
AN526C1032R10
SCREW
2 PL
9

D2965-3
CAP
8

DETAIL A
SCALE 4X



DETAIL B
SCALE 4X



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2017-08-11

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DESIGN	AP	DART AEROSPACE USA, INC.	
DRAWN	AJS	EUGENE, OR	
CHECKED	ML	DRAWING NO.	REV. F
MFG. APPR.	DP	D4680	SHEET 2 OF 5
APPROVED	WM	TITLE	SCALE
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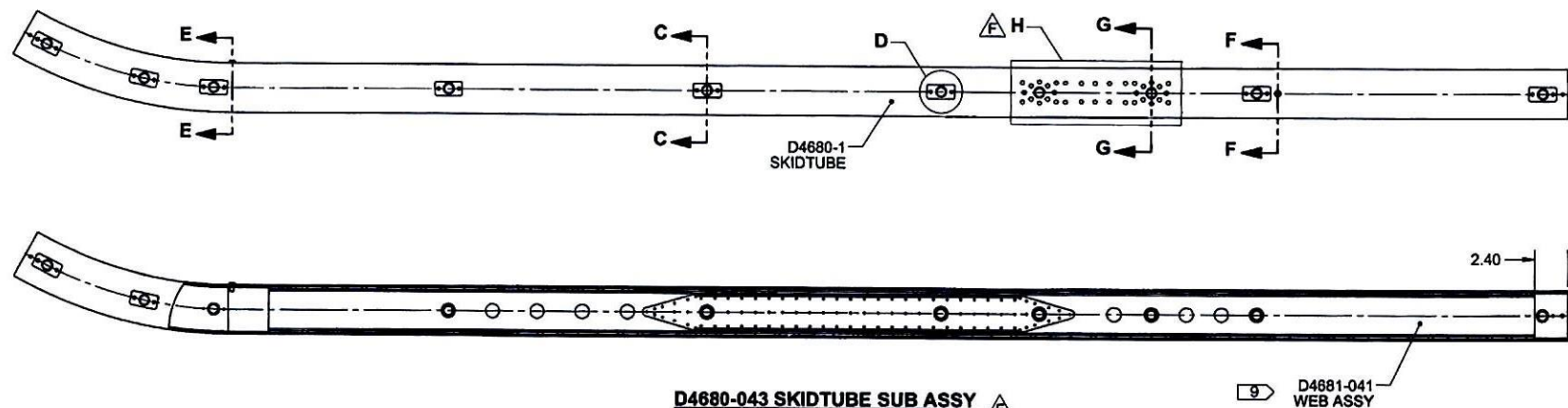
ITEM	QTY -043	P/N	DESCRIPTION
	X	D4680-043	SKIDTUBE SUB ASSY
1	1	D4680-1	SKIDTUBE
2	1	D4681-041	WEB ASSY
3	8	D4686-1	SPACER
4	16	D4753-1	DOUBLER
5	2	D5304-1	CROSSBOLT SPACER
6	2	D5520-1	DOUBLER
7	3	AN3C4A	BOLT
8	32	MS20601AD4W3	RIVET, BLIND, CSK
9	3	NAS1149C0332R	WASHER
10	3	AELS-1032-130	INSERT
11	68	CR3212-5-05	CSK RIVET, CHERRY MAX

OPEN TO
Ø0.750
THRU 2 PL

13 12 CR3212-5-05
CSK RIVET, CHERRY MAX
34 PL PER DOUBLER

DETAIL H
SCALE 4X

11 D5520-1 DOUBLER
2 PL



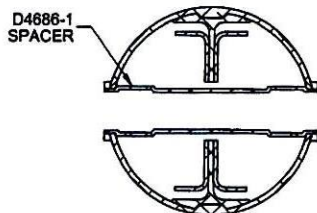
NOTES:

- 1) MATERIAL: N/A
- 2) FINISH: APPLY CHEMICAL CONVERSION COATING PER DART QSI 005 4.1 PRIOR TO INSTALLING D4681-041 WEB. POWDER COAT WHITE (REF 4.3.5.1) PER DART QSI 005 4.3
- 3) TOLERANCES: PER DART QSI 018 UNLESS OTHERWISE NOTED
- 4) UNITS: INCHES UNLESS OTHERWISE NOTED
- 5) BREAK SHARP EDGES: N/A
- 6) IDENTIFICATION: NONE
- 7) WEIGHT: 18.6 lbs
- 8) SEAL ALL MATING SURFACES USING PROSEAL 890/1422 OR MIL-S-8802 CLASS B2 SEALANT
- 9) INSERT D4681-041 WEB INTO D4680-1 SKIDTUBE IN LOCATION SHOWN OFF AFT END OF SKIDTUBE AND BOND WEB INTO OUTER TUBE WITH NON-STRUCTURAL SIKAFLEX -241/-291 ADHESIVE PER DART QSI 015
- 10) INSTALL D4686-1 SPACER AFTER INSTALLING D4753-1 DOUBLERS
- 11) LOCATE THE D5520-1 DOUBLER USING THE Ø0.188 PILOT HOLES ON THE SKIDTUBE AND DOUBLER
- 12) LOCATE QTY (34) HOLES ONTO THE SKIDTUBE PER D5520-1 DOUBLER AND DRILL Ø0.161 THRU SKIDTUBE AND DOUBLER USING DT10309
- 13) COUNTERSINK THE SKIDTUBE Ø0.286 X 100° (34 PL) AND INSTALL EACH D5520-1 DOUBLER USING QTY (34) CR3212-5-05 CSK RIVETS

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MFG. APPR.	DP	D4680	SHEET 3 OF 5
APPROVED	WM	TITLE	SCALE
DE APPR.	DS	SKIDTUBE	NTS
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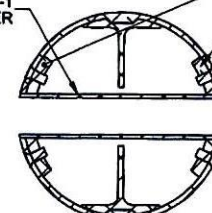


SECTION C-C
SCALE 4X
8 PL

INSTALL D4686-1 SPACER AS FOLLOWS (8 PL)
AFTER INSTALLING D4753-1 DOUBLERS PER DETAIL D

1. INSERT D4686-1 SPACER
2. SWAGE TO $\phi 0.650 +0.010/-0.000 \times 1.0$
DEEP PER QSI 002
3. TRIM/GRIND FLUSH PER QSI 002

D5304-1
CROSSBOLT SPACER

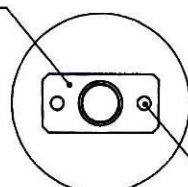


SECTION G-G Δ
SCALE 4X
2 PL

INSTALL D5304-1 SPACER AS FOLLOWS (2 PL)

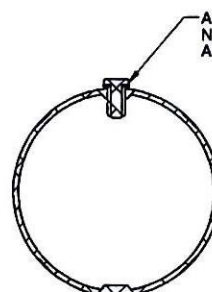
1. INSERT D5304-1 SPACER
2. SWAGE TO $\phi 0.585 +0.005/-0.000 \times 1.0$
DEEP PER QSI 002
3. OPEN THRU HOLE TO $\phi 0.625$

8
D4753-1
DOUBLER



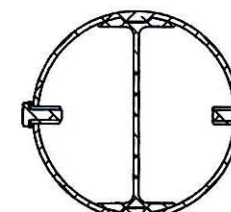
DETAIL D
16 PL (BOTH SIDES)
SCALE 4X

MS20601AD4W3
RIVET, BLIND, CSK
2 PL



SECTION E-E
SCALE 4X

AN3C4A BOLT
NAS1149C0332R WASHER
AELS-1032-130 INSERT



SECTION F-F
SCALE 4X

AN3C4A BOLT
NAS1149C0332R WASHER
AELS-1032-130 INSERT
2 PL

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DESIGN	AP
DRAWN	AJS
CHECKED	ML
MFG. APPR.	DP
APPROVED	WM
DE APPR.	DS
DATE	17.03.30

DART AEROSPACE USA, INC.
EUGENE, OR

DRAWING NO. **D4680** REV. F
SHEET 4 OF 5
TITLE **SKIDTUBE** SCALE NTS

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